

SEQUENCE LISTING

<110> Sheen, Jen
 Ausubel, Frederick M.
 Asai, Tsuneaki
 Tena, Guillaume

<120> Master Activators of Pathogen Responsive
 Genes

<130> 00786/397003

<150> PCT/US 02/07650

<151> 2002-03-13

<150> US 60/275,199

<151> 2001-03-12

<160> 16

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 4

<212> PRT

<213> Arabidopsis thaliana

<400> 1

Trp Arg Lys Tyr

1

<210> 2

<211> 7

<212> DNA

<213> Arabidopsis thaliana

<220>

<221> misc_feature

<222> 7

<223> n = C or T

<400> 2

tttgacn

7

<210> 3

<211> 1101

<212> DNA

<213> Arabidopsis thaliana

<400> 3

atgagaccga ttcaatcgcc tccaggagtt tccgttccgg tgaaaagccg tccccgtcgc 60
 cgtcctgata ttaccttacc gcttcctcaa cgcgatgttt ctctcgctgt acctcttcct 120
 ctcccaccta cttccggtgg ttccggtggc tctagtggat ctgcgccgtc ttctggtggt 180
 tcggcgctct caacgaacac taacagctcc atagaagcga agaactattc ggatttagtg 240
 agaggtaacc gtatcggaag cggagcaggt ggaacgggat acaaagtgat tcaccgtccg 300
 agttctcgtc tatatgcact taaggtgata tacggtaacc acgaggagac tgtgagacgt 360

```

cagatctgta gagagatcga gattttacga gatgtgaatc atccaaacgt tgtgaaatgt 420
cacgagatgt ttgatcagaa cgggtgagatc caggttttgc ttgagtttat ggataaagggt 480
tcttttagaag gtgctcatgt gtggaaagag caacaattag ctgatctatc tcgtcagatt 540
cttagtggtt tagcttatct ccatagccgt cacatagttc atcgtgatat caaaccatcg 600
aatcttttga taaactctgc taaaaacggt aagattgctg attttggagt tagtaggatc 660
ttggetcaga ctatggatcc gtgtaattca tctgttggaa ccattgctta tatgagtcct 720
gagaggatta aactgattt gaatcagggg aagtatgatg gttatgctgg agatatttgg 780
agcttaggtg ttagcatttt ggagttttac ttggggaggt ttcttttccc tgtgagtaga 840
caagggtgatt gggctagtct tatgtgtgcc atttgtatgt ctcagcctcc agaagctcca 900
gcgactgcgt cgccggagtt tcggcatttt atctcgtgtt gcttgcagag agaaccgggg 960
aaaaggagga gtgctatgca gctattgcag catcctttca tattaagagc aagtccgagc 1020
cagaacagggt ctctcagaa tctacatcaa ctcttgcctc ctctcgtcc tctgtcctcg 1080
tcttcttctc caaccacata g 1101

```

<210> 4

<211> 366

<212> PRT

<213> Arabidopsis thaliana

<400> 4

```

Met Arg Pro Ile Gln Ser Pro Pro Gly Val Ser Val Pro Val Lys Ser
1      5      10      15
Arg Pro Arg Arg Pro Asp Leu Thr Leu Pro Leu Pro Gln Arg Asp
20     25     30
Val Ser Leu Ala Val Pro Leu Pro Leu Pro Pro Thr Ser Gly Gly Ser
35     40     45
Gly Gly Ser Ser Gly Ser Ala Pro Ser Ser Gly Gly Ser Ala Ser Ser
50     55     60
Thr Asn Thr Asn Ser Ser Ile Glu Ala Lys Asn Tyr Ser Asp Leu Val
65     70     75     80
Arg Gly Asn Arg Ile Gly Ser Gly Ala Gly Gly Thr Val Tyr Lys Val
85     90     95
Ile His Arg Pro Ser Ser Arg Leu Tyr Ala Leu Lys Val Ile Tyr Gly
100    105    110
Asn His Glu Glu Thr Val Arg Arg Gln Ile Cys Arg Glu Ile Glu Ile
115    120    125
Leu Arg Asp Val Asn His Pro Asn Val Val Lys Cys His Glu Met Phe
130    135    140
Asp Gln Asn Gly Glu Ile Gln Val Leu Leu Glu Phe Met Asp Lys Gly
145    150    155    160
Ser Leu Glu Gly Ala His Val Trp Lys Glu Gln Gln Leu Ala Asp Leu
165    170    175
Ser Arg Gln Ile Leu Ser Gly Leu Ala Tyr Leu His Ser Arg His Ile
180    185    190
Val His Arg Asp Ile Lys Pro Ser Asn Leu Leu Ile Asn Ser Ala Lys
195    200    205
Asn Val Lys Ile Ala Asp Phe Gly Val Ser Arg Ile Leu Ala Gln Thr
210    215    220
Met Asp Pro Cys Asn Ser Ser Val Gly Thr Ile Ala Tyr Met Ser Pro
225    230    235    240
Glu Arg Ile Asn Thr Asp Leu Asn Gln Gly Lys Tyr Asp Gly Tyr Ala
245    250    255
Gly Asp Ile Trp Ser Leu Gly Val Ser Ile Leu Glu Phe Tyr Leu Gly
260    265    270
Arg Phe Pro Phe Pro Val Ser Arg Gln Gly Asp Trp Ala Ser Leu Met
275    280    285
Cys Ala Ile Cys Met Ser Gln Pro Pro Glu Ala Pro Ala Thr Ala Ser
290    295    300

```

Pro Glu Phe Arg His Phe Ile Ser Cys Cys Leu Gln Arg Glu Pro Gly
 305 310 315 320
 Lys Arg Arg Ser Ala Met Gln Leu Leu Gln His Pro Phe Ile Leu Arg
 325 330 335
 Ala Ser Pro Ser Gln Asn Arg Ser Pro Gln Asn Leu His Gln Leu Leu
 340 345 350
 Pro Pro Pro Arg Pro Leu Ser Ser Ser Ser Pro Thr Thr
 355 360 365

<210> 5
 <211> 82
 <212> DNA
 <213> Arabidopsis thaliana

<400> 5
 cttggctcag gatatggatc cgtgtaatga atctgttggga actccaacag attcattaca 60
 cggatccata tcctgagcca ag 82

<210> 6
 <211> 1101
 <212> DNA
 <213> Arabidopsis thaliana

<400> 6
 atgagaccga ttcaatcgcc tccaggagtt tccgttccgg tgaaaagccg tccccgtcgc 60
 cgtcctgac ttaccttacc gcttctctcaa cgcgatgttt ctctcgctgt acctcttct 120
 ctcccaccta cttccggtgg ttccggtggc tctagtggat ctgcgccgtc ttctgggtgg 180
 tgggcgtctt caacgaacac taacagctcc atagaagcga agaactattc ggatttagtg 240
 agaggtaacc gtatcggaag cggagcaggt ggaacggat acaaagtgat tcaccgtccg 300
 agttctcgtc tatatgcact taagtgata tacggtaacc acgaggagac tgtgagacgt 360
 cagatctgta gagagatcga gattttacga gatgtgaatc atccaaacgt tgtgaaatgt 420
 cagagatgt ttgatcagaa cggtgagatc cagggttttg ttaggtttat ggataaagg 480
 tctttagaag gtgctcatgt gtggaaagag caacaattag ctgatctatc tcgtcagatt 540
 cttagtgggt tagcttatct ccatagccgt cacatagttc atcgtgatat caaaccatcg 600
 aatcttttga taaactctgc taaaaacgtt aagattgctg attttggagt tagtaggac 660
 ttggctcagg atatggatcc gtgtaatgaa tctgttggaa ccattgctta tatgagtcct 720
 gagaggatta aactgattt gaatcagggg aagtatgatg gttatgctgg agatatttgg 780
 agcttaggtg ttagcatttt ggagttttac ttggggagggt ttcttttccc tgtgagtaga 840
 caaggtgatt gggctagtct tatgtgtgcc atttgtatgt ctacgcctcc agaagctcca 900
 gcgactgcgt cgccggagtt tcggcatttt atctcgtgtt gcttgacagag agaaccgggg 960
 aaaaggagga gtgctatgca gctattgcag catcctttca tattaagagc aagtccgagc 1020
 cagaacaggt ctctcagaa tctacatcaa ctcttgctc ctctcgtcc tctgtcctcg 1080
 tcttcttctc caaccacata g 1101

<210> 7
 <211> 366
 <212> PRT
 <213> Arabidopsis thaliana

<400> 7
 Met Arg Pro Ile Gln Ser Pro Pro Gly Val Ser Val Pro Val Lys Ser
 1 5 10 15
 Arg Pro Arg Arg Arg Pro Asp Leu Thr Leu Pro Leu Pro Gln Arg Asp
 20 25 30
 Val Ser Leu Ala Val Pro Leu Pro Leu Pro Pro Thr Ser Gly Gly Ser
 35 40 45
 Gly Gly Ser Ser Gly Ser Ala Pro Ser Ser Gly Gly Ser Ala Ser Ser

50	55	60
Thr Asn Thr Asn Ser Ser Ile Glu Ala Lys Asn Tyr Ser Asp Leu Val		
65	70	75
Arg Gly Asn Arg Ile Gly Ser Gly Ala Gly Thr Val Tyr Lys Val		80
	85	90
Ile His Arg Pro Ser Ser Arg Leu Tyr Ala Leu Lys Val Ile Tyr Gly		95
	100	105
Asn His Glu Glu Thr Val Arg Arg Gln Ile Cys Arg Glu Ile Glu Ile		110
	115	120
Leu Arg Asp Val Asn His Pro Asn Val Val Lys Cys His Glu Met Phe		125
	130	135
Asp Gln Asn Gly Glu Ile Gln Val Leu Leu Glu Phe Met Asp Lys Gly		140
	145	150
Ser Leu Glu Gly Ala His Val Trp Lys Glu Gln Gln Leu Ala Asp Leu		155
	165	170
Ser Arg Gln Ile Leu Ser Gly Leu Ala Tyr Leu His Ser Arg His Ile		175
	180	185
Val His Arg Asp Ile Lys Pro Ser Asn Leu Leu Ile Asn Ser Ala Lys		190
	195	200
Asn Val Lys Ile Ala Asp Phe Gly Val Ser Arg Ile Leu Ala Gln Asp		205
	210	215
Met Asp Pro Cys Asn Glu Ser Val Gly Thr Ile Ala Tyr Met Ser Pro		220
	225	230
Glu Arg Ile Asn Thr Asp Leu Asn Gln Gly Lys Tyr Asp Gly Tyr Ala		235
	245	250
Gly Asp Ile Trp Ser Leu Gly Val Ser Ile Leu Glu Phe Tyr Leu Gly		255
	260	265
Arg Phe Pro Phe Pro Val Ser Arg Gln Gly Asp Trp Ala Ser Leu Met		270
	275	280
Cys Ala Ile Cys Met Ser Gln Pro Pro Glu Ala Pro Ala Thr Ala Ser		285
	290	295
Pro Glu Phe Arg His Phe Ile Ser Cys Cys Leu Gln Arg Glu Pro Gly		300
	305	310
Lys Arg Arg Ser Ala Met Gln Leu Leu Gln His Pro Phe Ile Leu Arg		315
	325	330
Ala Ser Pro Ser Gln Asn Arg Ser Pro Gln Asn Leu His Gln Leu Leu		335
	340	345
Pro Pro Pro Arg Pro Leu Ser Ser Ser Ser Pro Thr Thr		350
	355	360
		365

<210> 8

<211> 1047

<212> DNA

<213> Arabidopsis thaliana

<400> 8

atgaaaccga	ttcaatctcc	ttctggagta	gcttcaccta	tgaagaaccg	tttacgcaaa	60
cgctctgacc	taagcttacc	actccacac	cgcgacgtcg	ctctcgccgt	acctctccct	120
ctccacctc	cttcttcctc	ttcatccgct	ccggcgctct	cctccgcat	ctcaaccaac	180
atctccgccc	ctaaaagctt	atccgagcta	gaacgagtg	accgaatcgg	aagcggagcc	240
ggaggaacgg	tttacaagt	aatccacact	ccgacgtcac	gtcctttcgc	tctcaaagt	300
atttacggaa	accacgaaga	taccgtgaga	cgtcagatct	gtagagagat	cgagatctta	360
agaagtgttg	atcatccaaa	cgttgtgaaa	tgtcacgata	tgtttgatca	taacgggtgag	420
atccaggttt	tgcttgagtt	tatggatcaa	ggatctcttg	aaggagctca	tatatggcaa	480
gaacaggaat	tagctgatct	ctctcgtcag	attcttagtg	gattagctta	tcttcacgt	540
cgatcatatc	ttcatcgtga	tatcaaacct	tcgaatctcc	ttataaactc	agctaaaaat	600
gtgaaaattg	ctgattttgg	tgtgagtagg	atcttggcac	aaacaatgga	tccttgtaat	660

```

tcattctgttg gtactattgc ttatatgagt cctgagagga ttaataactga tttgaatcat 720
ggctcgttacg atgggttatgc tggagatggt tggagtttag gtgttagtat cttggagttt 780
tacttgggga gggttccttt tgctgtgagt agacaagggtg attgggctag tcttatgtgt 840
gctatttgta tgtctcagcc acctgaagct ccggctacgg cgtctcagga gtttcgtcac 900
tttgtttctt gttgtttaca gagtgatcct cctaagagat ggtcagctca acagcttttg 960
cagcatcctt tcatacttaa agctaccggt ggtcctaata tccgtcaaat gttgccgccg 1020
cctcgtcctc ttccttctgc ctcttag 1047

```

```

<210> 9
<211> 348
<212> PRT
<213> Arabidopsis thaliana

```

```

<400> 9
Met Lys Pro Ile Gln Ser Pro Ser Gly Val Ala Ser Pro Met Lys Asn
 1          5          10          15
Arg Leu Arg Lys Arg Pro Asp Leu Ser Leu Pro Leu Pro His Arg Asp
 20          25          30
Val Ala Leu Ala Val Pro Leu Pro Leu Pro Pro Ser Ser Ser Ser
 35          40          45
Ser Ala Pro Ala Ser Ser Ser Ala Ile Ser Thr Asn Ile Ser Ala Ala
 50          55          60
Lys Ser Leu Ser Glu Leu Glu Arg Val Asn Arg Ile Gly Ser Gly Ala
 65          70          75          80
Gly Gly Thr Val Tyr Lys Val Ile His Thr Pro Thr Ser Arg Pro Phe
 85          90          95
Ala Leu Lys Val Ile Tyr Gly Asn His Glu Asp Thr Val Arg Arg Gln
 100          105          110
Ile Cys Arg Glu Ile Glu Ile Leu Arg Ser Val Asp His Pro Asn Val
 115          120          125
Val Lys Cys His Asp Met Phe Asp His Asn Gly Glu Ile Gln Val Leu
 130          135          140
Leu Glu Phe Met Asp Gln Gly Ser Leu Glu Gly Ala His Ile Trp Gln
 145          150          155          160
Glu Gln Glu Leu Ala Asp Leu Ser Arg Gln Ile Leu Ser Gly Leu Ala
 165          170          175
Tyr Leu His Arg Arg His Ile Val His Arg Asp Ile Lys Pro Ser Asn
 180          185          190
Leu Leu Ile Asn Ser Ala Lys Asn Val Lys Ile Ala Asp Phe Gly Val
 195          200          205
Ser Arg Ile Leu Ala Gln Thr Met Asp Pro Cys Asn Ser Ser Val Gly
 210          215          220
Thr Ile Ala Tyr Met Ser Pro Glu Arg Ile Asn Thr Asp Leu Asn His
 225          230          235          240
Gly Arg Tyr Asp Gly Tyr Ala Gly Asp Val Trp Ser Leu Gly Val Ser
 245          250          255
Ile Leu Glu Phe Tyr Leu Gly Arg Phe Pro Phe Ala Val Ser Arg Gln
 260          265          270
Gly Asp Trp Ala Ser Leu Met Cys Ala Ile Cys Met Ser Gln Pro Pro
 275          280          285
Glu Ala Pro Ala Thr Ala Ser Gln Glu Phe Arg His Phe Val Ser Cys
 290          295          300
Cys Leu Gln Ser Asp Pro Pro Lys Arg Trp Ser Ala Gln Gln Leu Leu
 305          310          315          320
Gln His Pro Phe Ile Leu Lys Ala Thr Gly Gly Pro Asn Leu Arg Gln
 325          330          335
Met Leu Pro Pro Pro Arg Pro Leu Pro Ser Ala Ser
 340          345

```

<210> 10
 <211> 80
 <212> DNA
 <213> Arabidopsis thaliana

<400> 10
 cttggcacia gaaatggatc cttgtaatga atctgttggg accaacagat tcattacaag 60
 gatccatttc ttgtgccaag 80

<210> 11
 <211> 1047
 <212> DNA
 <213> Arabidopsis thaliana

<400> 11
 atgaaaccga ttcaatctcc ttctggagta gcttcaccta tgaagaaccg tttacgcaaa 60
 cgtcctgacc taagcttacc actcccacac cgcgacgtcg ctctcgccgt acctctccct 120
 ctcccacctc cttcttctctc ttcatccgct ccggcgctct cctccgcat ctcaaccaac 180
 atctccgctg ctaaaagctt atccgagcta gaacgagtg accgaatcgg aagcggagcc 240
 ggaggaacgg tttacaaaagt aatccacact ccgacgtcac gtcccttctgc tctcaaaagt 300
 atttacggaa accacgaaga taccgtgaga cgtcagatct gtagagagat cgagatctta 360
 agaagtgttg atcatccaaa cgttgtgaaa tgtcacgata tgtttgatca taacgggtgag 420
 atccaggttt tgcttgagtt tatggatcaa ggatctcttg aaggagctca tatatggcaa 480
 gaacaggaat tagctgatct ctctcgctcag attcttagtg gattagctta tcttcatcgt 540
 cgtcatatcg ttcatcgtga tatcaaacct tcgaatctcc ttataaactc agctaaaaat 600
 gtgaaaattg ctgatttttg tgtgagtagg atcttggcac aagaaatgga tccttgtaat 660
 gaatctgttg gtactattgc ttatatgagt cctgagagga ttaatactga tttgaatcat 720
 ggtcgttacg atggttatgc tggagatggt tggagtttag gtgttagtat cttggagttt 780
 tacttgggga ggtttctctt tgctgtgagt agacaagggt attgggctag tcttatgtgt 840
 gctatttgta tgtctcagcc acctgaagct ccggctacgg cgtctcagga gtttcgtcac 900
 tttgttctt gttgtttaca gagtgatcct cctaagagat ggtcagctca acagcttttg 960
 cagcatcctt tcatacttaa agctaccggg ggtcctaate tccgtcaaat gttgccgccg 1020
 cctcgtctc ttccttctgc ctcttag 1047

<210> 12
 <211> 348
 <212> PRT
 <213> Arabidopsis thaliana

<400> 12
 Met Lys Pro Ile Gln Ser Pro Ser Gly Val Ala Ser Pro Met Lys Asn
 1 5 10 15
 Arg Leu Arg Lys Arg Pro Asp Leu Ser Leu Pro Leu Pro His Arg Asp
 20 25 30
 Val Ala Leu Ala Val Pro Leu Pro Leu Pro Pro Pro Ser Ser Ser Ser
 35 40 45
 Ser Ala Pro Ala Ser Ser Ser Ala Ile Ser Thr Asn Ile Ser Ala Ala
 50 55 60
 Lys Ser Leu Ser Glu Leu Glu Arg Val Asn Arg Ile Gly Ser Gly Ala
 65 70 75 80
 Gly Gly Thr Val Tyr Lys Val Ile His Thr Pro Thr Ser Arg Pro Phe
 85 90 95
 Ala Leu Lys Val Ile Tyr Gly Asn His Glu Asp Thr Val Arg Arg Gln
 100 105 110
 Ile Cys Arg Glu Ile Glu Ile Leu Arg Ser Val Asp His Pro Asn Val
 115 120 125
 Val Lys Cys His Asp Met Phe Asp His Asn Gly Glu Ile Gln Val Leu

```

      130              135              140
Leu Glu Phe Met Asp Gln Gly Ser Leu Glu Gly Ala His Ile Trp Gln
145              150              155              160
Glu Gln Glu Leu Ala Asp Leu Ser Arg Gln Ile Leu Ser Gly Leu Ala
      165              170              175
Tyr Leu His Arg Arg His Ile Val His Arg Asp Ile Lys Pro Ser Asn
      180              185              190
Leu Leu Ile Asn Ser Ala Lys Asn Val Lys Ile Ala Asp Phe Gly Val
      195              200              205
Ser Arg Ile Leu Ala Gln Glu Met Asp Pro Cys Asn Glu Ser Val Gly
      210              215              220
Thr Ile Ala Tyr Met Ser Pro Glu Arg Ile Asn Thr Asp Leu Asn His
225              230              235              240
Gly Arg Tyr Asp Gly Tyr Ala Gly Asp Val Trp Ser Leu Gly Val Ser
      245              250              255
Ile Leu Glu Phe Tyr Leu Gly Arg Phe Pro Phe Ala Val Ser Arg Gln
      260              265              270
Gly Asp Trp Ala Ser Leu Met Cys Ala Ile Cys Met Ser Gln Pro Pro
      275              280              285
Glu Ala Pro Ala Thr Ala Ser Gln Glu Phe Arg His Phe Val Ser Cys
      290              295              300
Cys Leu Gln Ser Asp Pro Pro Lys Arg Trp Ser Ala Gln Gln Leu Leu
305              310              315              320
Gln His Pro Phe Ile Leu Lys Ala Thr Gly Gly Pro Asn Leu Arg Gln
      325              330              335
Met Leu Pro Pro Pro Arg Pro Leu Pro Ser Ala Ser
      340              345

```

<210> 13
 <211> 366
 <212> PRT
 <213> Arabidopsis thaliana

```

<400> 13
Met Arg Pro Ile Gln Ser Pro Pro Gly Val Ser Val Pro Val Lys Ser
1      5      10      15
Arg Pro Arg Arg Arg Pro Asp Leu Thr Leu Pro Leu Pro Gln Arg Asp
      20      25      30
Val Ser Leu Ala Val Pro Leu Pro Leu Pro Pro Thr Ser Gly Gly Ser
      35      40      45
Gly Gly Ser Ser Gly Ser Ala Pro Ser Ser Gly Gly Ser Ala Ser Ser
      50      55      60
Thr Asn Thr Asn Ser Ser Ile Glu Ala Lys Asn Tyr Ser Asp Leu Val
65      70      75      80
Arg Gly Asn Arg Ile Gly Ser Gly Ala Gly Gly Thr Val Tyr Lys Val
      85      90      95
Ile His Arg Pro Ser Ser Arg Leu Tyr Ala Leu Lys Val Ile Tyr Gly
      100      105      110
Asn His Glu Glu Thr Val Arg Arg Gln Ile Cys Arg Glu Ile Glu Ile
      115      120      125
Leu Arg Asp Val Asn His Pro Asn Val Val Lys Cys His Glu Met Phe
      130      135      140
Asp Gln Asn Gly Glu Ile Gln Val Leu Leu Glu Phe Met Asp Lys Gly
145      150      155      160
Ser Leu Glu Gly Ala His Val Trp Lys Glu Gln Gln Leu Ala Asp Leu
      165      170      175
Ser Arg Gln Ile Leu Ser Gly Leu Ala Tyr Leu His Ser Arg His Ile

```

```

      180      185      190
Val His Arg Asp Ile Lys Pro Ser Asn Leu Leu Ile Asn Ser Ala Lys
      195      200      205
Asn Val Lys Ile Ala Asp Phe Gly Val Ser Arg Ile Leu Ala Gln Thr
      210      215      220
Met Asp Pro Cys Asn Ser Ser Val Gly Thr Ile Ala Tyr Met Ser Pro
      225      230      235      240
Glu Arg Ile Asn Thr Asp Leu Asn Gln Gly Lys Tyr Asp Gly Tyr Ala
      245      250      255
Gly Asp Ile Trp Ser Leu Gly Val Ser Ile Leu Glu Phe Tyr Leu Gly
      260      265      270
Arg Phe Pro Phe Pro Val Ser Arg Gln Gly Asp Trp Ala Ser Leu Met
      275      280      285
Cys Ala Ile Cys Met Ser Gln Pro Pro Glu Ala Pro Ala Thr Ala Ser
      290      295      300
Pro Glu Phe Arg His Phe Ile Ser Cys Cys Leu Gln Arg Glu Pro Gly
      305      310      315      320
Lys Arg Arg Ser Ala Met Gln Leu Leu Gln His Pro Phe Ile Leu Arg
      325      330      335
Ala Ser Pro Ser Gln Asn Arg Ser Pro Gln Asn Leu His Gln Leu Leu
      340      345      350
Pro Pro Pro Arg Pro Leu Ser Ser Ser Ser Pro Thr Thr
      355      360      365

```

<210> 14
 <211> 348
 <212> PRT
 <213> Arabidopsis thaliana

```

<400> 14
Met Lys Pro Ile Gln Ser Pro Ser Gly Val Ala Ser Pro Met Lys Asn
  1      5      10      15
Arg Leu Arg Lys Arg Pro Asp Leu Ser Leu Pro Leu Pro His Arg Asp
      20      25      30
Val Ala Leu Ala Val Pro Leu Pro Leu Pro Pro Ser Ser Ser
      35      40      45
Ser Ala Pro Ala Ser Ser Ser Ala Ile Ser Thr Asn Ile Ser Ala Ala
      50      55      60
Lys Ser Leu Ser Glu Leu Glu Arg Val Asn Arg Ile Gly Ser Gly Ala
      65      70      75      80
Gly Gly Thr Val Tyr Lys Val Ile His Thr Pro Thr Ser Arg Pro Phe
      85      90      95
Ala Leu Lys Val Ile Tyr Gly Asn His Glu Asp Thr Val Arg Arg Gln
      100      105      110
Ile Cys Arg Glu Ile Glu Ile Leu Arg Ser Val Asp His Pro Asn Val
      115      120      125
Val Lys Cys His Asp Met Phe Asp His Asn Gly Glu Ile Gln Val Leu
      130      135      140
Leu Glu Phe Met Asp Gln Gly Ser Leu Glu Gly Ala His Ile Trp Gln
      145      150      155      160
Glu Gln Glu Leu Ala Asp Leu Ser Arg Gln Ile Leu Ser Gly Leu Ala
      165      170      175
Tyr Leu His Arg Arg His Ile Val His Arg Asp Ile Lys Pro Ser Asn
      180      185      190
Leu Leu Ile Asn Ser Ala Lys Asn Val Lys Ile Ala Asp Phe Gly Val
      195      200      205
Ser Arg Ile Leu Ala Gln Thr Met Asp Pro Cys Asn Ser Ser Val Gly

```

210	215	220
Thr Ile Ala Tyr Met Ser Pro Glu Arg Ile Asn Thr Asp Leu Asn His		
225	230	235
Gly Arg Tyr Asp Gly Tyr Ala Gly Asp Val Trp Ser Leu Gly Val Ser		240
	245	250
Ile Leu Glu Phe Tyr Leu Gly Arg Phe Pro Phe Ala Val Ser Arg Gln		255
	260	265
Gly Asp Trp Ala Ser Leu Met Cys Ala Ile Cys Met Ser Gln Pro Pro		270
	275	280
Glu Ala Pro Ala Thr Ala Ser Gln Glu Phe Arg His Phe Val Ser Cys		285
	290	295
Cys Leu Gln Ser Asp Pro Pro Lys Arg Trp Ser Ala Gln Gln Leu Leu		300
305	310	315
Gln His Pro Phe Ile Leu Lys Ala Thr Gly Gly Pro Asn Leu Arg Gln		320
	325	330
Met Leu Pro Pro Pro Arg Pro Leu Pro Ser Ala Ser		335
	340	345

<210> 15
 <211> 2562
 <212> DNA
 <213> Arabidopsis thaliana

<400> 15
 tcgtccatga tggacatata tgtgactgcg tatttacaca caccgcacgt atgcttattt 60
 cacacgttag aagaagaatt caaagaagtc ggttctattt gtattcttgt gagatcatca 120
 atatgacaat atcggttctat taatatacgt ataattcata tgttgatcat gtttcacata 180
 ccatgtcgac agtcgacgta cgtacaaaag tataaatagt atgaatctaa taacagcacc 240
 aagattgaag ttcatcttct aatcaaaact atcataaagt ggtttcaaaa tagtggtttt 300
 tctgatgaaa ctataactga gttataatca atccgaaatt atataactaa ttatatattg 360
 gaactagata aacgcaaaaa catgagcagt ttcttatttt ttttgtccag atttaaaatt 420
 tggagtgtta aaatatacgg agtgttacac aatgaaaaca caagaagtca agaaccata 480
 agttatttta attaataata ttgtatttaa agtgattatt aaaaaataat gtaaaaactg 540
 attatttggt gacaaaaaac agttagttat agttaaatag tattgatgca tatatatact 600
 atctcattat tttggtatta ctgagtactc acatctttta taaagacaaa gatagttagt 660
 gtataattca aatcgaactc acagaagtca ataagcgcgt aaaaatacaa aaatatctgg 720
 cagactttag caaggtttgt tttccaacag aaatgggtcat ttcagaatca tttacatatc 780
 catatatata gctcttaaat ggtatatatt gggttaattggg tattcgttta aataattttg 840
 ttttctgtaa atttcaaata ttaatctgat cagtttatcc atgtgtgtat atttagtgta 900
 ttatcatcaa tatatgacat agacagactt tcaagttggg gcaagagggg atgaaaattt 960
 cttcccagtt gcaagagtaa gctgactagc attttttttt tatatataat ttatttctca 1020
 aatgggtttt attattgttt tgttgacttt aagtttttgc cttttatggg actgcaatca 1080
 cccgtgccaa cttttaatct ccatacgcta aaaaagaaag aaaaggctac cattatggac 1140
 cgaaatattt aagaccataa tacaaaatta tacgaatatt ttctgtaact tatatatag 1200
 atcatttgac aaagcaaagt caatcaaata aacttcaaag aaattatgag cttataataa 1260
 gtttgatagt gttaaataata atcaaatcat taaatttagt atttatttca tctcggtttc 1320
 catttgatag atagataaat gaaagatagc atcgccaata atgaaaaaac tttatttgat 1380
 ggcaatactt tgttacatca tttctgtttt ctttaatttca tgtcgaaata ttgccatgat 1440
 tgtgttcaac ataactagtt ttgaggtaac aagttaaaaa tttgttatat tttttgaata 1500
 tgttattcag ttgaaagtca ttttagatgta agtaaaaaaca aacataagaa gttaacatat 1560
 caatattaac acagcgaata atcattatta caaaaaaaag caaaaaaata gaagaagata 1620
 ttatatattg gagaatcttt ctttagtctt agttgggaag attttgtgct atgggattaa 1680
 aggtatccat ccctattcta tgatagaggc gtgggggttat tggaccaatc tatatatatt 1740
 accacaaggc ttaagatgaa gtgataatac agtattatta ataccctccc aaattatttt 1800
 taaatattta tcaaaagaag cttacggtat agatcactat tgcagcatta ttctataagt 1860
 ttatttaatt tcagtggtctc gttacgtgaa cacaaggtaa gctaatagac ttacgtgccc 1920
 cattaaacac atacataatt atacaagtat catgaaacta gtgacaaaac ctcgatcaaa 1980

taaagaaatt	accatgacga	caaaagataa	ttaaaaaaaa	aactactata	tgtcatactc	2040
atgcatatgc	atgtacaaat	gccgctttta	atattttaatt	tagttaaaagc	aatgatattt	2100
aaattctctc	tacttcatat	atattccaaa	agacatattg	tcaaattcct	tttttttagtt	2160
atatataatc	atatattcat	attgtttatat	tttcaatatt	taatagtaag	atggactttc	2220
ctgaatggtg	tgtatgattt	ataatttgag	atattttgtc	ggagatggat	atttgacaag	2280
ttaatgttac	tttattaaaa	ttttctaaac	atttaggtac	gaattgactt	tttcaaaagt	2340
caacacaata	aatttttaaaa	gtttaatgac	ttaacgggtt	cacatgggaa	acgaaaacac	2400
cctaaaccac	aaacaatcta	atcttattttc	cttctttata	taaaccgctg	tttcccaaaa	2460
ggcttgttct	cgtcatatgt	acttgtacac	caaccaccca	aaagagataa	aagaggaaac	2520
aaaaactcga	aaagagagag	atatatgggt	gagtggtt	at		2562

<210> 16

<211> 2796

<212> DNA

<213> Arabidopsis thaliana

<400> 16

ctgacagtga	acttcattgt	tcaagcgagg	tgagtttcct	atttttcttc	ttctcctttc	60
aattaaaatt	tcaggggtta	tgatctctag	ggtttaggtt	ttattttctt	aaactaaacc	120
ctaaattctt	tttcttcttc	tttttcttgt	aatttccaga	tgactgcga	acgctagagg	180
agggtcgata	tcgaagagga	agcgttatat	aggatcatgg	gaccaaata	tatcgtatag	240
attcggttct	tgttcttcta	taccttatga	gagtagaagt	ttttctcttc	aagagaaaaa	300
aaaaaaaaag	aaaaaaaaaa	aagaagagta	gaaatttctc	tgtgtttttt	tttaccaaca	360
agacacaaat	gaaactggtc	caaaaggagt	gtgtataatc	tctgtggaga	cataactaat	420
acgttgatga	atttcaagaa	tacttggatt	atatagatta	accctgactc	ccttagatag	480
agatcgaaat	cgggtggtga	tttctgagac	catacaagtt	ctgatcagat	tactactaag	540
taaatcttaa	ttattagact	gtttttaatg	gatttttctg	ctctaataat	aacgtaata	600
gatttttttt	ttttttttgt	atgtttggct	tgacagcccg	ggtaatgaga	agtttggtta	660
gagcaaaagg	cactaatctc	acgtaagaaa	acactttttt	catcaaccat	gtatataatc	720
atgtcgggtt	acataaaccg	tatcgtctat	tcaagaattt	agttttgtat	aattataata	780
tttttttcag	actacttttc	aattaagcat	ctttttcttg	gatttttttt	tcacaaaggg	840
agagctttta	atttttgcat	taacttatat	attttaaatt	atacatgcat	gcataccgac	900
ttatataaat	catatggtca	atatgagact	tttgatttat	attatttgtc	aaactaagcat	960
cttttcagat	gagggttcag	cacctttggt	agaattatcg	gaccagaaga	tcacatcaac	1020
gtttaccaaa	tcaacaaaaa	aatccaatcc	gtccaaaaaa	tttggaact	gtttgaaaga	1080
ttcgaaatgt	tggagcaagg	atactcagtt	ccaatctctg	agcagaatct	gatatgactc	1140
atctactcat	aagactttgc	gagatagacc	ggtacaaaaa	cgtttccaag	ggttcataat	1200
atatggatta	atgtgagtta	ttgtggacgt	tggtggtgta	gaagccgcgg	tagtcgtgga	1260
aacactaatt	agttatctcc	tgtaagctat	ttttattttt	tttctcact	tcctcttctc	1320
cgcagctatg	tataattttg	gttggttatc	tccaaaactt	tttatggtca	aacaattttg	1380
agaaagtaat	ttggaaagaa	aaaaggttta	agaatatctt	tttatcgtca	agtcctcttc	1440
caaattactt	ccttaaaact	gtttgaccat	aaaaagtcac	agcaaggat	tagttattct	1500
aatttaaatt	aaacgccttt	ttatcaacaa	caaaaaaaag	aagaagattt	gatatgttga	1560
aaagtattag	ggacgcttat	tagggcagta	ttcctagtta	ttgcattttc	tttcgggtcat	1620
tcgaccttag	gatcatacct	caatctgtat	gactgtattc	gccatgtgaa	ttccaatatt	1680
acatagtgac	caaatttgat	atccaactaa	aagtcgatct	ttgatctaaa	cgaaatgaca	1740
actatttggg	tagtgattgc	aggttggaaa	gatttacctt	ctagacctgt	cttacgaagc	1800
tagtattcta	aagtaatctt	cataaaccga	attcagaaac	aaaaaaagaa	aaggagtcca	1860
aaattgtatg	atcatacatt	aatatcagaa	tagtctcttt	tgttaaataa	atatctgaag	1920
aatatatatc	tctttgatta	ttttgtggat	ggcaatgaaa	ctaagaatat	atattcattg	1980
acttagaagt	cgacaaaaaa	aaataaaaaa	attattgact	taattactag	ttgaccaata	2040
tatatattat	taaaagaaca	tattgtatcg	ttgaaagcgg	atcatcggtt	tttaaaagaa	2100
aaacacatcg	ttgaaacttg	aaagtgatga	ctaataaaaa	gatctaaaac	tgtccggtca	2160
cctaccaatg	tggttttgca	aattattgtc	aagtaccttg	actatattaa	ataaaaaaat	2220
tcaccgtaac	acattgatat	tcaactgatt	cctaaaaaaa	tatacaaaact	attgggagtt	2280
gtgagatttt	ttatatcagt	gttgggtctc	ttacatttgt	gatgtggtgt	tatagcatat	2340
atagtaataa	actcaaaagg	aaattagatg	tgttttgacc	atttattaaa	atgaaccttt	2400
tcttgtcaaa	catttgaaaa	atactagttt	tttttttttg	caacgttgta	aataatagtt	2460

```

aaaaatagat ttttaagtctc gttttttttat gcatatagtt tcattcgctt tattagactc 2520
aaatatactt ttaattaaat tttgcagaga attaaaggta atcatttgcc aaggaaaaac 2580
catgcaaata tgcaataagt agaaataatg ttaatgagag taagcggtga catatattac 2640
gtcctgggtcc gaacattctt aaagttgctt aacactaata accttagaag atggttgggtt 2700
gactatcaac atcttattga ccaaagtgtt tttttttttt aattataaaa cagttgctca 2760
ttgctctagc ccagagaaaag cagctcaatt aagtaa 2796

```